

REMARKS**Amendments to the Specification and Sequence Listing**

The specification has been amended to include the required sequence identifiers. A version to show changes made to the specification is provided in Appendix A. The Sequence Listing has been replaced with a substitute Sequence Listing, which lists the required sequence identifiers. Applicants submit a paper copy of the Sequence Listing and a computer readable form (diskette) of the Sequence Listing herewith, for the instant application, in compliance with 37 CFR. 1.821(e), 1.821 (f), 1.821(g), and 1.825(b). The Sequence Listing and the substitute computer readable copy filed herewith are the same. The Sequence Listing contains sequences present in the specification, originally submitted. No new matter has been added to the application by way of this amendment.

SUMMARY

In view of the foregoing amendment and remarks, reconsideration of the application is respectfully requested.

If a telephone conversation with Applicants' attorney would expedite the prosecution of the above-identified application, the examiner is urged to call Applicants' attorney at (617) 227-7400.

Respectfully submitted,

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APPENDIX A

Version Showing Changes Made to the Specification:

The last paragraph of page 37:

Clones containing VL and VH sequences can be placed in an expression cassette incorporating a single-chain antibody construct including the VL and VH sequences separated by a linker. In one highly preferred procedure, the 5'-leader sequence is removed from VL and replaced with a sequence containing a Sal I site preceding residue 1 of the native protein. Constant region residues from the 3'-end are replaced with a primer adding a sequence complementary to a sequence coding for a linker sequence (e.g., the 16-residue linker sequence ESGSVSSEELAFRSLD (SEQ ID NO: 5) (J. K. Batra et al., "Anti-TAc (FV)-PE40, a Single Chain

The last paragraph of page 59:

Generation of Surface-Linked scFv and 1-A^d expression constructs The generation and functional characteristics of surfaced-linked scFv constructs derived from the hamster mAbs 145-2C11 (anti-murineCD3 ϵ ; Leo O et al., Proc Natl Acad Sci U S A. 1987. 84: 1374-8) and PV-1 (anti-murine CD28) and 5H7 (anti-humanClass1 MHC; Smith D, et al. J Immunol 1994. 153: 1054) are known in the art. Surface-expression for these proteins has been achieved using glycosylphosphatidylinositol (GPI) anchor motif. An anti-CTLA-4 scFv construct (4F10scFv) was generated from the hybridoma UC-10-4F10 which secretes a mAb with specific binding affinity for murine CTLA-4. Total RNA prepared from hybridoma cells by the guanidinium isoiniocyanate CsCL method was used to synthesize cDNA with the First Strand cDNA kit (Novagen, Madison, WI) according to the manufacturer's instructions. Amplification of the V_H gene from cDNA was preformed with the following primers: Sense: 5'

CGAATGATGCATCC(C/G)AGGTG(CA)AGCTG(C/G/A)(A/T)G(G/C)AGTC 3' (SEQ ID NO: 6) which incorporates an NsiI restriction site (in bold): Antisense: 5' GCAAATAAGCTTTTGTTCGGCTGAGGAGACGGT(G/A)AC 3' (SEQ ID NO: 7) which incorporates a HindIII restriction site (in bold). Amplification of the V_L gene was performed with the primers: Sense 5' CGAATGGACGTCATGATGACACAGTCTCC 3' (SEQ ID NO: 8) which incorporates an AatII restriction site (in bold): Antisense: 5' TATGATCCGCGGAGGAACGTTT(T/G)ATTTCCAGCTTGGTCCC 3' (SEQ ID NO: 9) which incorporates a SacII restriction site (in bold). Cycling conditions were (93°C x 1 minute. 50°C x 1 minute. 72°C x 1 minute for 35 cycles using the DNA polymerase Pfu (Stratagene, La

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Jolla, CA). The PCR products of the V_L and V_H genes were digested with the restriction endonucleases Aat II/SacII and Nsi I/ Hind III respectively. The digested PCR products were cloned into the temperature-inducible expression vector Genex in the orientation NH₂-4F10 VL-linker-4F10 VH-COOH. Surface-linked 4F10scFv (subsequently referred to as mem4F10scFv) was constructed by a tailed primer Polymerase Chain Reaction (PCR) strategy using 4F10scFv as a template. The primers used were: Sense: 5'

GAGTAAGCTTATGAGGACCCCTGCTCAGTTTCTTGGAATCTTGTTGCTCTGGTTTCC
AGGTATCAAATGTGACGTCATGATGACACAGTCTCC 3' (SEQ ID NO: 10) which incorporates HindIII restriction site (in bold). A murine light chain leader peptide sequence (underlined) and nucleotide residues 4 to 26 of the sequence for 4F10scFv (in italics).

Antisense: 5'

AGCTTCTTAAGCTTCCGCTACCACTAGACACAGGGGCCAGTGGATAGACCGATGGG
GCTGTTGTTTTGGCGGCTGAGGAGACGGTGACC 3' (SEQ ID NO: 11) which incorporates an AflIII restriction site (in bold) sequence encoding a flexible spacer peptide (underlined) and

the final 19 residues of the sequence for 4F10scFv. Cycling conditions used to generate the modified 4F10scFv with these primers were: (94°C x 1 minute). 1 cycle (94°C x 30 seconds. 58°C x 30 seconds. 72°C x 1 minute). 5 cycles: (94°C x 30 seconds 72°C x 1 minute). 30 cycles: (72°C x 10 minutes). 1 cycle. Amplification was carried out on a Geneamp 9600 thermal cycler (Perkins Elmer Corp., Norwalk, CT) using *Taq* DNA polymerase (Life Technologies). This resulted in a single product which was then digested with the restriction endonucleases HindIII and AflIII (Life Technologies). Two surface-linkage strategies were used to generate a membrane bound form of the modified 4F10scFv (mem-4F10scFv). The first utilized a GPI anchor motif while the second utilized a cDNA fragment corresponding to the entire transmembrane domain and the first 34 amino acid residues of the cytoplasmic domain of the murine B7-1 (CD86) protein. The latter was generated by PCR using cDNA encoding murine B7-1 (CD80) as a template and with the following primers: Sense: 5'

GAGCTGCTTAAGCAAGAACACACTTGTGCTC 3' (SEQ ID NO: 12) which includes an AflIII site (in bold) and the first 20 nucleotides of the B7-1 transmembrane domain (in italics).

Antisense: 5' GTTCGCTCTAGACTAAAGGAAGACGGTCTGTTTCAGC 3' (SEQ ID NO: 13) which incorporates an XbaI site (in bold) and in-frame stop codon (underlined) and 22 nucleotide residues from the intracytoplasmic domain of B7-1 (in italics). Cycling conditions for generation of the surface-linkage domain were: (94°C X 1 minute), 1 cycle (94°C X 30 seconds, 57°C X 30

Please amend the first paragraph of page 61 to read:

seconds, 72°C X 1 minute), 35 cycles: (72°C X 10 minutes), 1 cycle. The modified 4F10scFv product was digested with the restriction endonucleases HindIII/AflIII while the surface-linkage motifs were digested with the enzyme pair AflIII/XbaI. Final constructs were then assembled by simultaneous ligation of the digested 4F10scFv and the digested surface-linkage motifs into the HindIII and XbaI sites of the mammalian expression vector pCDBA3.1 (+) (Invitrogen Corp.

Carlsbad, CA) at the HindIII and XbaI sites to generate mem4F10scFvpCDNA3.1(+).

Complementary DNA sequences for the α and β chains of the murine Class II MHC protein I-A^d were generated by reverse transcription and polymerase chain reaction (RT-PCR). Total RNA was extracted from the BALB/c-derived B cell lymphoma cell line A20 using Trizol Reagent (Life Technologies) according to the manufacturers instruction. Reverse transcription with an oligo-dT primer was carried out using the Superscript II first strand cDNA synthesis kit (Life Technologies) by recommended protocol and was followed by PCR using the DNA polymerase mixture Elongase (Life Technologies). Primer for PCR amplification of the coding region of the two chains were derived from published sequence and were as follows: I-A^d α : Sense – 5' GAGCTGAAGCTTATGCCGTGCAGAGCTCTGATTC TGG 3' (SEQ ID NO: 14) (HindIII site in bold). Antisense – 5' GCCCGCTCTAGATCATAAAGGCCCTGGGTGTCTGG 3' (SEQ ID NO: 15) (XbaI site in bold): I-A^d β Sense – 5' GAGCTGAAGCTTATGGCTCTGCAGATCCCCAGC 3' (SEQ ID NO: 16) Antisense – 5' GCCCGCTCTAGATCACTGCAGGAGCCCTGCTGGAGG 3' (SEQ ID NO: 17). Conditions for PCR were: (94°C X 1 minute) 1 cycle: (94°C X 1 minute) 1 cycle: (94°C X 30 seconds, 57°C X 30 seconds, 68°C X 30 seconds) 35 cycles: (68°C X 10 minutes) 1 cycle. The resulting products were digested with the restriction enzymes HindIII and XbaI and ligated into the expression vectors pCDNA3.1(+)(I-A^d α) and pCDNA3.1(+)(I-A^d β).